CLAIMS

1. A compressor comprising a motor element and a compression element driven by the motor element, both elements being disposed in a housing which stores oil,

the compression element comprising

a crankshaft having a main shaft and an eccentric shaft coupled with the main shaft,

a cylinder block which supports the main shaft so that the shaft can revolve freely, and provided with a cylinder bore for forming a compression chamber,

a piston which reciprocates in the cylinder bore, and

a connection structure which connects the piston with the eccentric shaft; wherein

an area of a sliding-contact surface formed on the piston in the cylinder bore at a compression load side is greater than that at an anti-compression load side.

2. The compressor of claim 1; wherein, a length of a circumferential surface of the piston in a reciprocation direction is longer at the compression load side as compared to that at the anti-compression load side.

3. The compressor of claim 1; wherein,

the piston has a piston top surface at the cylinder bore side and a piston skirt surface at the connection structure side, and the piston is provided with a hollow area of no sliding-contact in the circumferential surface.

4. The compressor of claim 3; wherein,

the piston is provided with the sliding-contact surfaces on the circumferential

surface at an end of the piston top surface and at an end of the piston skirt surface, respectively, each of the sliding-contact surfaces having its own length from the end, whereas the hollow area of no sliding-contact is disposed in between the sliding-contact surface at the end of the piston top surface and that of the piston skirt surface.

5. The compressor of claim 3; wherein,

the piston is provided with the sliding-contact surfaces which are extending from the piston top surface to reach the piston skirt surface at the compression load side and at the anti-compression load side, respectively, a width in a circumferential direction of the sliding-contact surface at compression load side being wider than that at the anti-compression load side.

6. The compressor recited in one of claims 1 through 5, which is driven on at least an operating frequency that is lower than the commercially available power supply frequency.

7. A compressor comprising

a crankshaft formed of a main shaft and an eccentric shaft coupled with the main shaft at the upper part,

a cylinder block which supports the main shaft so that the shaft can revolve freely, and provided with a cylinder bore for forming a compression chamber,

a piston which reciprocates in the cylinder bore, and

a connection structure which connects the piston with the eccentric shaft and makes a pendulum action with respect to the piston; wherein

a side of a circumferential surface of the piston locating in the same side as the connection structure at its compression stroke, with respect to a reference plane, has a smaller sliding surface than a sliding surface locating in the opposite side, where the

reference plane being a plane perpendicular to the pendulum action plane and includes a center axis of the piston.

8. The compressor of claim 7; wherein,

the piston has a piston top surface at the cylinder bore side and a piston skirt surface at the connection structure side, and the piston top surface and the piston skirt surface are not in parallel to each other.

9. The compressor of claim 7; wherein,

the circumferential surface of the piston is provided with a surface for making sliding-contact with the cylinder bore and a hollow area which stays out of the sliding-contact.